Installation Instructions

ControlLogix™ Controller and Memory Board

Catalog Number: 1756-L1, -L1M1, -L1M2, -L1M3, -L55, -L55M12, -L55M13, -L55M14, -L55M16, -L55M22, -L55M23, -L55M24, -L61, -L62, -L63, -M1, -M2, -M3, -M12, -M13, -M14, -M16, -M22, -M23, -M24, 1784-CF64

Are You Replacing a Controller That has Failed?

For abbreviated steps on how to replace a controller that you suspect has failed, see page 4.

WARNING

An electrical arc can occur if you:

- insert or remove the controller while backplane power is on
- connect or disconnect the battery
- connect or disconnect the serial cable with power applied to this module or the serial device on the other end of the cable

This could cause an explosion in hazardous location installations. Make sure that power is removed or the area is nonhazardous before proceeding.

File Name:
AB_ControlLogix_1756L1_L55_L6_M_install_D603

Publication 1756-IN101H-EN-P - June 2003

Important User Information

Because of the variety of uses for the products described in this publication, those responsible for the application and use of these products must satisfy themselves that all necessary steps have been taken to assure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards. In no event will Rockwell Automation be responsible or liable for indirect or consequential damage resulting from the use or application of these products.

Any illustrations, charts, sample programs, and layout examples shown in this publication are intended solely for purposes of example. Since there are many variables and requirements associated with any particular installation, Rockwell Automation does not assume responsibility or liability (to include intellectual property liability) for actual use based upon the examples shown in this publication.

Allen-Bradley publication SGI-1.1, *Safety Guidelines for the Application, Installation and Maintenance of Solid-State Control* (available from your local Rockwell Automation office), describes some important differences between solid-state equipment and electromechanical devices that should be taken into consideration when applying products such as those described in this publication.

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Throughout this publication, notes may be used to make you aware of safety considerations. The following annotations and their accompanying statements help you to identify a potential hazard, avoid a potential hazard, and recognize the consequences of a potential hazard:

WARNING

Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.

ATTENTION

Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss.

IMPORTANT

Identifies information that is critical for successful application and understanding of the product.

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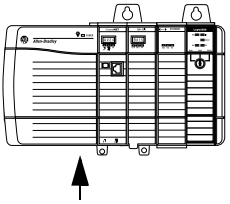
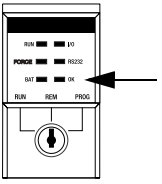
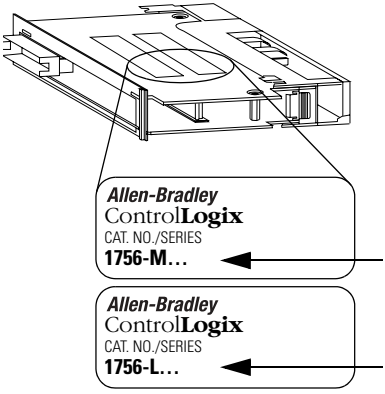
Replace a Suspected Failed Controller



1. Cycle the power to the chassis.



2. Make sure the OK LED is solid red. If the OK LED is *not* solid red, the controller *does not* require replacement.

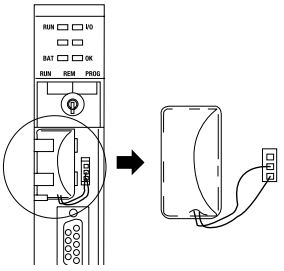


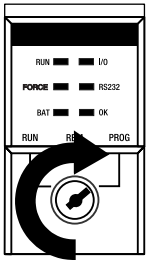
3. Match the catalog numbers of the controllers and memory boards.

Catalog number of the memory board, if one is installed

Catalog number of the controller

4. Install the battery.





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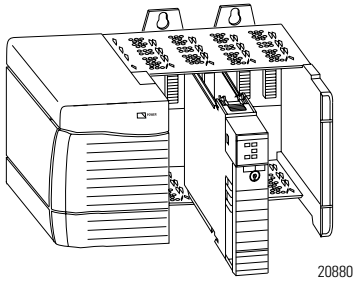
5. Insert the key and turn it to the PROG position.



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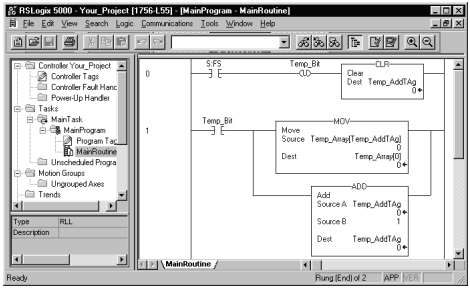
6. Insert the controller into the chassis.

7. Update the firmware of the controller.



8. Download the RSLogix 5000 project to the controller.

Avoid These Common Errors

<table>
<tr><th>If you have this controller:</th><th>Make sure that you:</th></tr>
<tr><td>all</td><td>Update the firmware of the controller before you use it for the first time. Controllers ship without usable firmware.</td></tr>
<tr><td>1756-L1</td><td>Install only the following memory board (one per controller):
1756-M1, -M2, or -M3</td></tr>
<tr><td>1756-L55</td><td>• If you purchased a 1756-L55 controller without a memory board, you must install a memory board.
• Install only the following memory board (one per controller):
1756-M12, -M13, -M14, -M16, - M22, -M23, or -M24
IMPORTANT
• Before you change a memory board, update the controller to a revision that is compatible with the memory board that you intend to install.
• Use only the following revisions of firmware:
<table><tr><th>For this controller and memory board:</th><th>Use this revision of firmware:</th></tr><tr><td>1756-L55M12</td><td>10.x or later</td></tr><tr><td>1756-L55M13</td><td>6.x or later</td></tr><tr><td>1756-L55M14</td><td>6.x or later</td></tr><tr><td>1756-L55M16</td><td>6.x or later</td></tr><tr><td>1756-L55M22</td><td>10.x or later</td></tr><tr><td>1756-L55M23</td><td>8.x or later</td></tr><tr><td>1756-L55M24</td><td>8.x or later</td></tr></table></td></tr>
<tr><td>1756-L61, -L62, or -L63</td><td>• Do not install a memory board.
• Use the following firmware revision:
<table><tr><th>For this controller:</th><th>Use this revision:</th></tr><tr><td>1756-L61 or -L62</td><td>12.x or later</td></tr><tr><td>1756-L63</td><td>10.x or later</td></tr></table></td></tr>
</table>

How to Handle ControlLogix Components

ATTENTION

Preventing Electrostatic Discharge

This equipment is sensitive to electrostatic discharge, which can cause internal damage and affect normal operation. Follow these guidelines when you handle this equipment:

- Touch a grounded object to discharge potential static.
- Wear an approved grounding wriststrap.
- Do not touch connectors or pins on component boards.
- Do not touch circuit components inside the equipment.
- If available, use a static-safe workstation.
- When not in use, store the equipment in appropriate static-safe packaging.

Prepare the Chassis

Before you install a controller, do these preliminary steps:

☑ Install a ControlLogix chassis according to the *ControlLogix Chassis Installation Instructions*, publication 1756-IN080.

☑ Install a ControlLogix power supply according to the corresponding installation instructions:

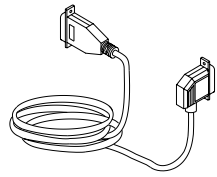
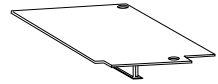
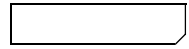
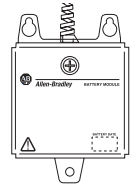
Install this power supply:	According to this publication:
1756-PA72	*ControlLogix Power Supplies Installation Instructions*, publication 1756-5.67
1756-PB72	
1756-PA75	*ControlLogix Power Supplies Installation Instructions*, publication 1756-5.78
1756-PB75	
1756-PA75R	• *ControlLogix Redundant Power Supplies Installation Instructions*, publication 1756-IN573 • *ControlLogix Redundant Power Supplies Chassis Adapter Module Installation Instructions*, publication 1756-IN574
1756-PB75R	

Make Sure that You Have All the Components

These components ship with the controller:

Component:	Description:
	1756-BA1 battery
	key

You may also use these components with the controller:

If you have this controller:	And you want to:	Then use this component:
all	connect a device to the serial port of the controller (e.g., connect a computer to the controller)	1756-CP3 serial cable  42576
1756-L1, -L1Mx, or -L55Mxx	increase the memory of the controller or add nonvolatile memory	1756-Mx memory board  40042
		1756-Mx memory board label 
1756-L55Mxx or -L63	provide battery support for the controller longer than the time that is available with the 1756-BA1 battery	1756-BATM ControlLogix battery module  31298
1756-L61, -L62, or -L63	Add nonvolatile memory	1784-CF64 Industrial CompactFlash card 31376-M

Install only one memory board per controller. Use the following table to determine which memory board goes with your controller.

Use this memory board:	With this controller:		
	1756-L1, -L1Mx	**1756-L55, -L55Mxx**	**1756-L6x**
1756-M1	✔		
1756-M2	✔		
1756-M3	✔		
1756-M12		✔	
1756-M13		✔	
1756-M14		✔	
1756-M16		✔	
1756-M22		✔	
1756-M23		✔	
1756-M24		✔	

Remove the Controller from the Chassis, If Required

You can install or remove a ControlLogix controller while chassis power is on and the system is operating. If you remove the controller, all the devices owned by the controller go to their configured fault state.

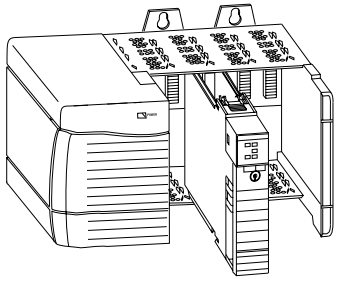
WARNING

When you insert or remove the module while backplane power is on, an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

Repeated electrical arcing causes excessive wear to contacts on both the module and its mating connector. Worn contacts may create electrical resistance that can affect module operation.

1. On the top and bottom of the controller, press the locking tabs.

2. Slide the controller out of the chassis.



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Install a Memory Board on a 1756-L1, -L1Mx, or -L55Mxx Controller

ATTENTION

- *Before* you install or replace the memory board, disconnect the battery from the controller. Otherwise, you may damage the memory board.
- *Do not* remove the cover or install a different memory board of a 1756-L61, -L62, or -L63 controller. This will damage the controller.

If your controller requires a memory board or requires a different memory board, install or replace the board as follows:

Tools that You Need

To add a memory board to a 1756-L1, -L1Mx, or -L55Mxx controller, you need the following tools:

- #2 phillips screwdriver
- grounding wriststrap

Determine if the Firmware Requires an Update

Determine if you must update the firmware of the controller *before* you replace the board.

1. Is this a 1756-L55 or -L55Mxx controller?

If:	Then:
No	Go to "Remove the Side Plate of the Controller" on page 13.
Yes	Go to step 2.

2. Are you replacing a memory board with a memory board that has a different catalog number? For example, are you replacing a 1756-M13 memory board with a 1756-M23 memory board?

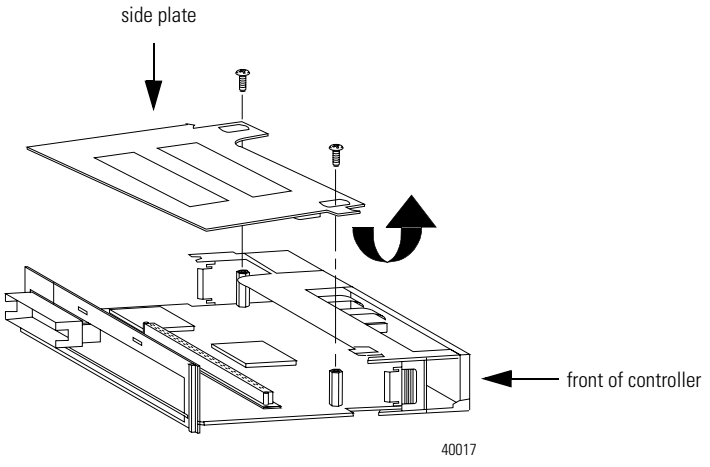
If:	Then:
No	Go to "Remove the Side Plate of the Controller" on page 13.
Yes	*Before* you replace the board, update the firmware of the controller: • Update the firmware to a revision that is compatible with the memory board that you will install. • See "Update the Controller" on page 30.

Remove the Side Plate of the Controller

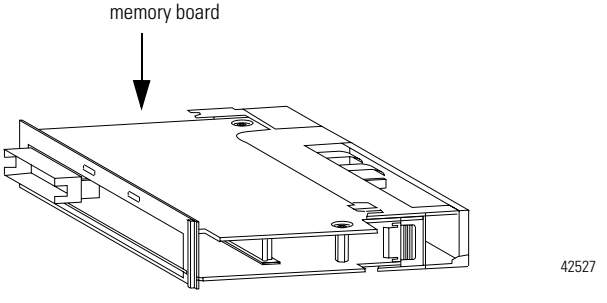
1. Lay the controller on its side with the label facing up.

2. While wearing a grounding wriststrap, remove the two screws that attach the side plate to the controller.

3. Rotate the side plate up and unhook it from the controller.



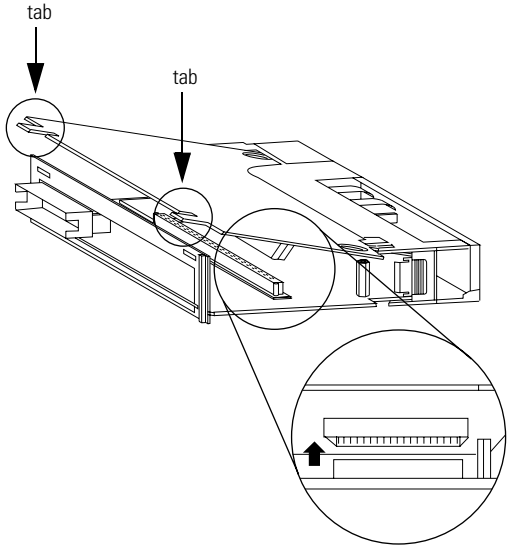
Remove the Existing Memory Board (If Any)



1. Does the controller already have a memory board?

If:	Then:
No	Go to "Install the Memory Board" on page 16.
Yes	Go to step 2.

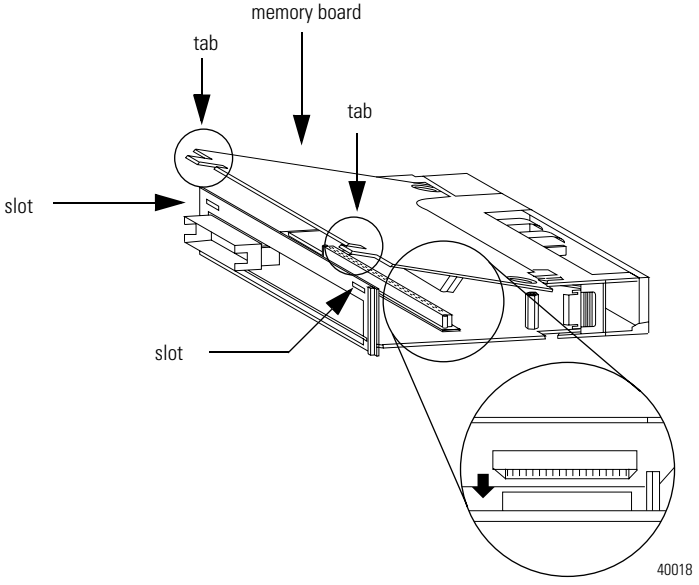
2. Pull the plastic back edge of the controller out slightly to clear the tabs on the memory board.



3. Gently separate and remove the memory board from the controller.

Install the Memory Board

1. Place the memory board over the connector and slide the memory board into the controller.



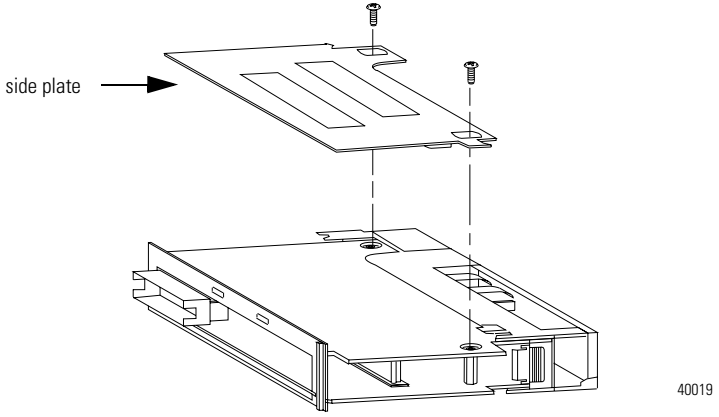
2. Pull the plastic back edge of the controller out slightly to clear the tabs of the memory board.

3. Line up the connectors.

4. Place your hands on the boards over the connectors and gently squeeze them together.

5. Make sure that the tabs on the memory board extend through the slots on the plastic housing of the controller.

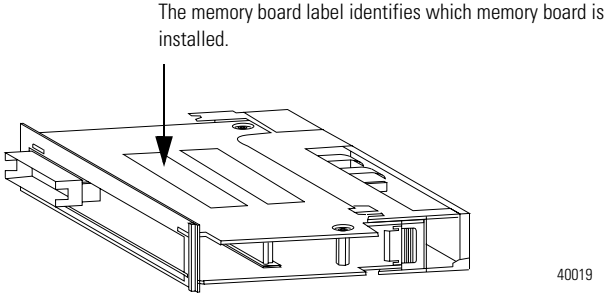
Replace the Side Plate



1. Line up the hinge tabs on the side plate with the slots in the plastic housing of the controller.
2. Gently press the side plate against the controller.
3. Replace the screws.

Attach Labels

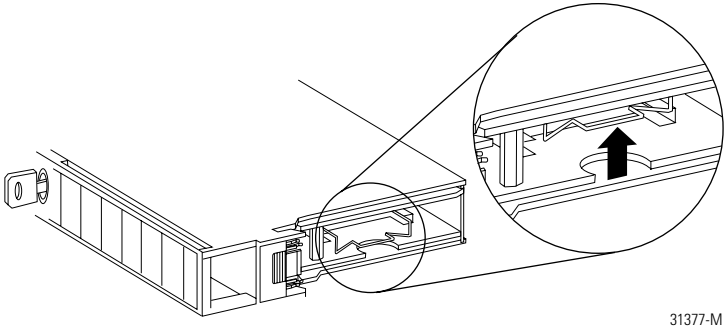
Place the memory board label on the side of the controller.



Install a 1784-CF64 Industrial CompactFlash Card in a 1756-L61, -L62, or -L63 Controller

A 1784-CF64 Industrial CompactFlash card provides nonvolatile memory for a 1756-L61, -L62, or -L63 controller. If you are using a CompactFlash card, install the card as follows:

1. Lay the controller on its side with the front facing to the left.
2. Raise the locking clip all the way up.



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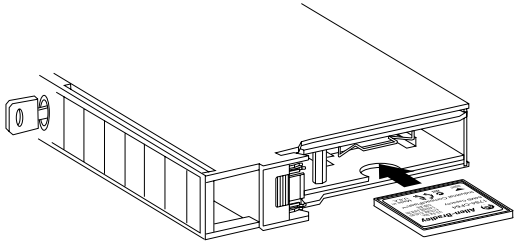
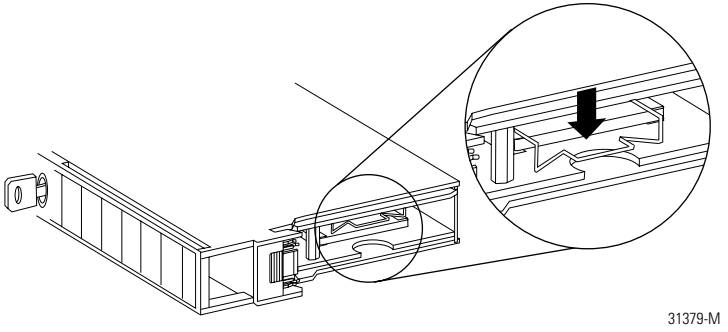


31378-M

3. Insert the 1784-CF64 Industrial CompactFlash card into the socket at the bottom of the controller.

4. Pull the clip forward and then downward until it snaps into place over the card.



Connect a Battery

WARNING

When you connect or disconnect the battery an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

For Safety information on the handling of lithium batteries, including handling and disposal of leaking batteries, see Guidelines for Handling Lithium Batteries, publication AG 5-4.

ATTENTION

Connect only a 1756-BA1 battery or a 1756-BATM battery module to the controller. If you connect a different battery, you may damage the controller.

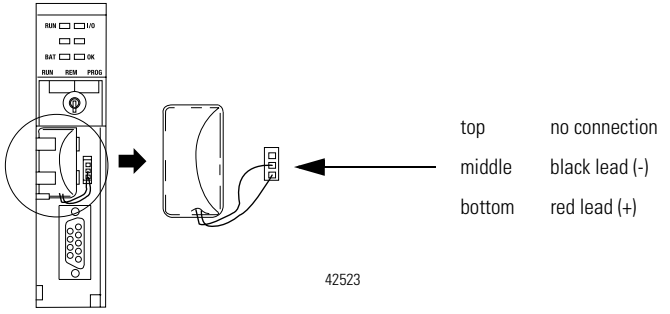
To maintain the memory of the controller while the controller is without power, either use nonvolatile memory or connect a battery:

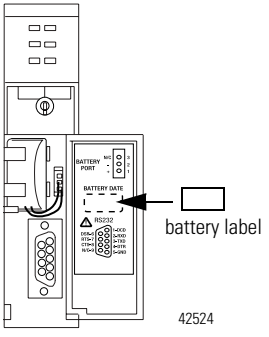
If your controller:	And you want to:	Then:
has nonvolatile memory	→	A battery is permitted but *not* required.
does not have nonvolatile memory	maintain memory *only while the controller is in the chassis*	Connect a 1756-BA1 battery or a 1756-BATM battery module.
	maintain memory while the controller is *out of the chassis*	Connect a 1756-BA1 battery.

To connect a 1756-BATM battery module, see the *ControlLogix Battery Module Installation Instructions,* publication 1756-IN576.

To connect a 1756-BA1 battery:

1. Install a 1756-BA1 battery.





2. Write on the battery label the date you install the battery.

3. Attach the label to the inside of the controller door.

ATTENTION

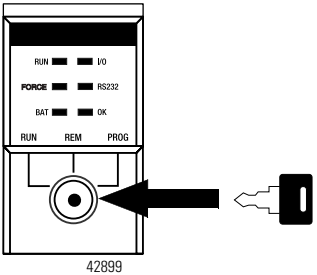
To prevent possible battery leakage, even if the BAT LED is off, replace a 1756-BA1 battery according to the following schedule:

If the temperature 1 in. below the chassis is:	Replace the battery within:
0° to 35° C	No replacement is required until the BAT LED turns on.
36° to 40° C	3 years
41° to 45° C	2 years
46° to 50° C	16 months
51° to 55° C	11 months
56° to 60° C	8 months

ATTENTION

Store batteries in a cool, dry environment. We recommend 25°C with 40% to 60% relative humidity. You may store batteries for up to 30 days between -45° to 85°C, such as during transportation. To avoid possible leakage, *do not* store batteries above 60°C for more than 30 days.

Turn the Keyswitch to the PROG Position



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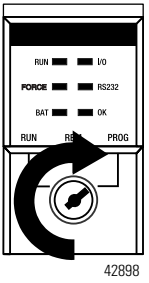
1. Insert the key into the controller.

2. Turn the key to the PROG position.



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Install the Controller into the Chassis

When you install a ControlLogix controller, you can:

- place the controller in any slot
- use multiple controllers in the same chassis

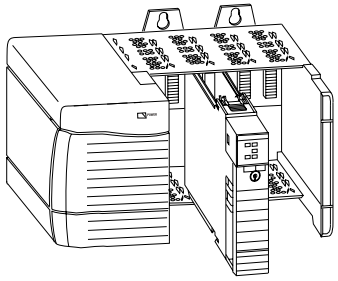
You can install or remove a ControlLogix controller while chassis power is on and the system is operating.

WARNING

When you insert or remove the module while backplane power is on, an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

Repeated electrical arcing causes excessive wear to contacts on both the module and its mating connector. Worn contacts may create electrical resistance that can affect module operation.

1. Align the circuit board with the top and bottom guides in the chassis.

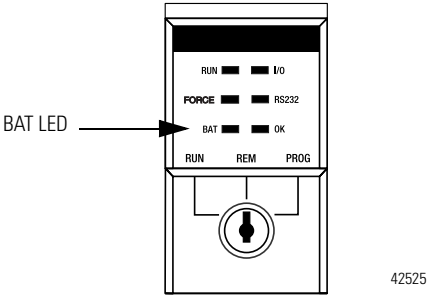


20880

2. Slide the module into the chassis. The controller is fully installed when it is flush with the power supply or other installed modules and the top and bottom latches are engaged.

Check the BAT LED

1. Turn on the chassis power.



2. Is the BAT LED off?

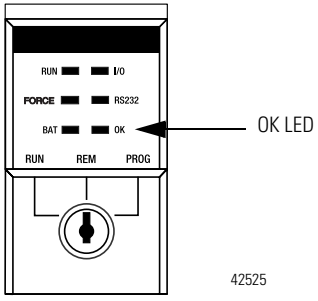
If:	Then:
Yes	Go to "Determine Which Firmware Revisions to Use" on page 29.
No	Go to step 3.

3. Check that the battery or battery module is correctly connected to the controller.

4. If the BAT LED remains on, install another battery.

5. If the BAT LED remains on after you complete step 4, contact your Rockwell Automation representative or local distributor.

Check the OK LED



1. What color is the OK LED?

If:	Then:	Actions:
solid green	The controller is OK and its firmware has been updated.	No further actions are required. However, the revision of firmware must be compatible with your revision of RSLogix 5000 software.
flashing red	The controller is OK but it requires a firmware update.	Go to "Determine Which Firmware Revisions to Use" on page 29.
solid red	The memory board of the controller may not be compatible with the revision of firmware.	Go to step 2.

2. Is this a 1756-L55 or -L55Mxx controller?

If:	Then:
No	The controller is not operational. Contact your Rockwell Automation representative or local distributor.
Yes	Go to step 3.

3. Did you replace a memory board with a memory board that has a different catalog number? For example, did you replace a 1756-M13 memory board with a 1756-M23 memory board?

If:	Then:
No	The controller is not operational. Contact your Rockwell Automation representative or local distributor.
Yes	Go to step 4.

4. Re-install the previous memory board.

5. Update the firmware of the controller to a revision that is compatible with the memory board that you intend to install. See "Determine Which Firmware Revisions to Use" on page 29.

6. Install the new memory board.

7. What color is the OK LED?

If:	Then:
solid green	No further actions are required. However, the revision of firmware must be compatible with your revision of RSLogix 5000 software.
solid red	The controller is not operational. Contact your Rockwell Automation representative or local distributor.

Determine Which Firmware Revisions to Use

To update the firmware of a controller, first install a firmware upgrade kit.

- An upgrade kit ships on a supplemental CD along with RSLogix 5000 software.
- To download an upgrade kit, go to www.ab.com. Choose *Product Support*. Choose *Firmware Updates*.

Use the following table to determine which firmware revisions to use with your controller and memory board combination:

For this controller and memory board:	Use this revision:
1756-L1	any
1756-L1M1	any
1756-L1M2	any
1756-L1M3	any
1756-L55M12	10.x or later
1756-L55M13	6.x or later
1756-L55M14	6.x or later
1756-L55M16	6.x or later
1756-L55M22	10.x or later
1756-L55M23	8.x or later
1756-L55M24	8.x or later
1756-L61	12.x or later
1756-L62	12.x or later
1756-L63 *without* a 1784-CF64 Industrial CompactFlash card	10.x or later
1756-L63 *with* a 1784-CF64 Industrial CompactFlash card	11.x or later

Make sure that the firmware revision is compatible with your revision of RSLogix 5000 software.

Update the Controller

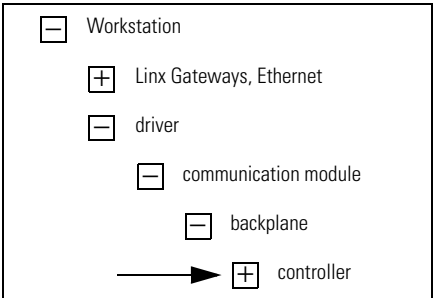
TIP RSLogix 5000 software, revision 10.0 or later, lets you update the firmware of a controller as part of the download sequence. To update the controller, download your project and follow the prompts of the software.

1. Connect the controller or chassis to the same network as your workstation.
2. Start ControlFLASH software.
3. Choose *Next* >.
4. Select the catalog number of the controller and choose *Next* >.
5. Expand the network until you see the controller.

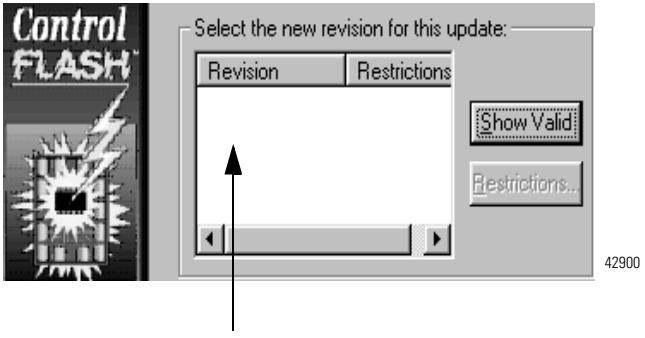
IMPORTANT If the required network is not shown, first configure a driver for the network in RSLinx software.

To expand a network one level, do one of the following:

- Double-click the network.
- Select the network and press the → key.
- Click the + sign.



6. Select the controller and choose *OK*.



7. Select the revision level to which you want to update the controller and choose *Next* >.

IMPORTANT If the Revision list is empty, download a new upgrade kit. Some older upgrade kits do not work with new controllers.

8. To start the update of the controller, choose *Finish* and then *Yes*.

After the controller is updated, the status box displays *Update complete*.

9. Choose *OK*.

10. To close ControlFLASH software, choose *Cancel* and then *Yes*.

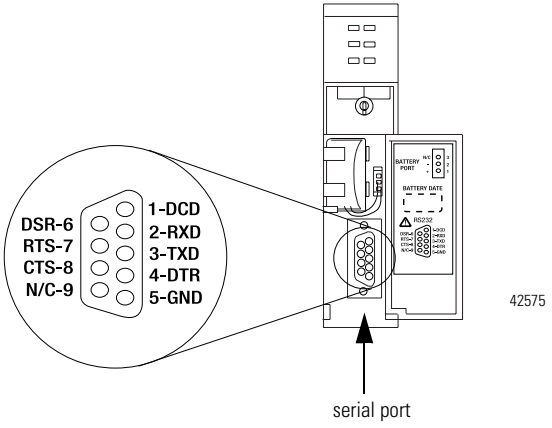
Connect a Serial Cable

WARNING

If you connect or disconnect the serial cable with power applied to this module or the serial device on the other end of the cable, an electrical arc can occur. This could cause an explosion in hazardous location installations.

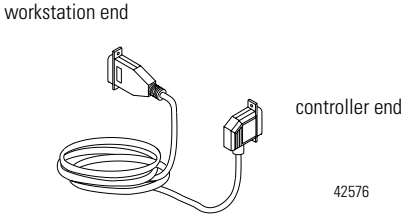
Make sure that power is removed or the area is nonhazardous before proceeding.

Use the serial port for RS-232 communication.



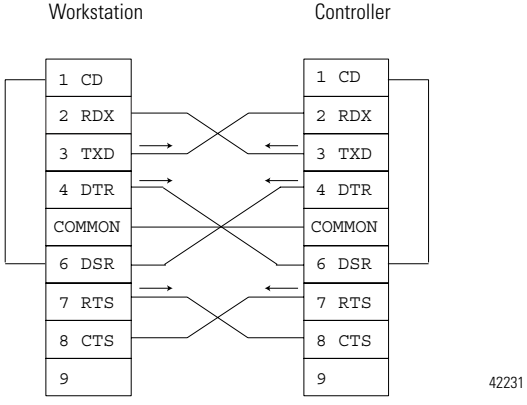
To connect a workstation to the serial port, use one of these cables:

- 1756-CP3 serial cable
- 1747-CP3 cable from the SLC product family (If you use this cable, the controller door may not close.)



If you make your own serial cable:

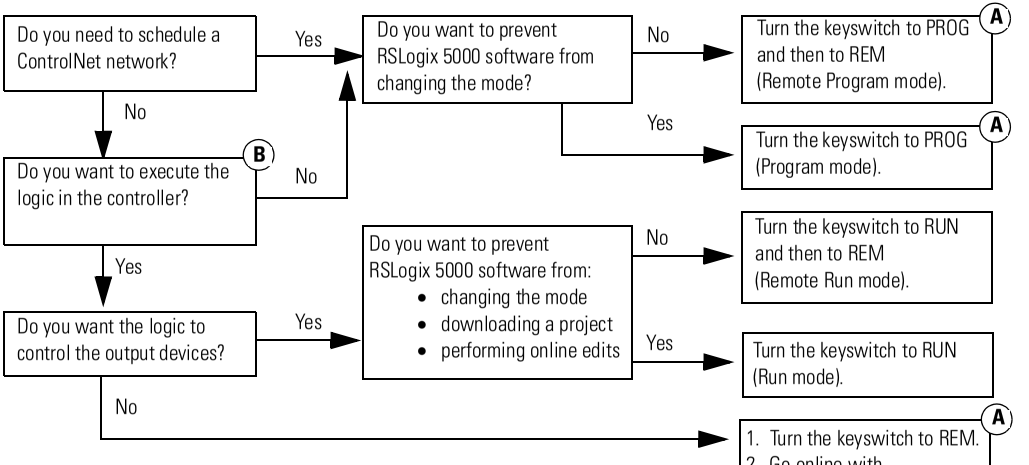
- Limit the length to 15.2m (50 ft).
- Wire the connectors as follows:



- Attach the shield to both connectors

Choose the Operating Mode of the Controller

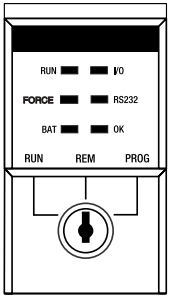
Important
- All modes send and receive data in response to a message from another controller.
- All modes produce and consume tags.


Do you need to schedule a ControlNet network?
Yes
No
Do you want to prevent RSLogix 5000 software from changing the mode?
No
Yes
Turn the keyswitch to PROG and then to REM (Remote Program mode).
A
Turn the keyswitch to PROG (Program mode).
A
Do you want to execute the logic in the controller?
B
No
Yes
Do you want to prevent RSLogix 5000 software from:
• changing the mode
• downloading a project
• performing online edits
No
Yes
Turn the keyswitch to RUN and then to REM (Remote Run mode).
Turn the keyswitch to RUN (Run mode).
Do you want the logic to control the output devices?
Yes
No
1. Turn the keyswitch to REM.
2. Go online with RSLogix 5000 software and choose Test mode.
A

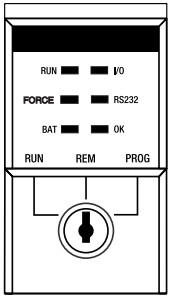
(A) Outputs revert to their configured state for Program mode.

(B) This includes Message (MSG) instructions.

Interpret Controller LEDs

Front Panel:	Indicator:	Color:	Description:
	RUN	off	The controller is in Program or Test mode.
		solid green	The controller is in Run mode.
	I/O	off	Either: • There are *no* devices in the I/O configuration of the controller. • The controller does *not* contain a project (controller memory is empty).
		solid green	The controller is communicating with all the devices in its I/O configuration.
		flashing green	One or more devices in the I/O configuration of the controller are *not* responding.
		flashing red	The chassis is bad. Replace the chassis.
	FORCE	off	• No tags contain I/O force values. • I/O forces are inactive (disabled).
		solid amber	• I/O forces are active (enabled). • I/O force values may or may not exist.
		flashing amber	One or more input or output addresses have been forced to an On or Off state, but the forces have not been enabled.
	RS232	off	There is no activity.
		solid green	Data is being received or transmitted

Interpret Controller LEDs Continued

Front Panel:	Indicator:	Color:	Description:	
	BAT	off	The battery supports memory.	
		solid red	Either the battery is: • not installed. • 95% discharged and should be replaced.	
	OK	off	No power is applied.	
		flashing red	**If the controller is:**	**Then:**
			a new controller	The controller requires a firmware update.
			not a new controller	Major fault occurred. To clear the fault, *either*: • Turn the keyswitch ⇒ PROG ⇒ RUN ⇒ PROG. • Go online with RSLogix 5000 software.
		solid red	The controller detected a non-recoverable fault, so it cleared the project from memory. To recover: 1. Cycle power to the chassis. 2. Download the project. 3. Change to Run mode. If the OK LED remains solid red, contact your Rockwell Automation representative or local distributor.	
		solid green	The controller is OK	
		flashing green	The controller is storing or loading a project to or from nonvolatile memory.	

Specifications: ControlLogix Controllers - Sheet 1 of 2

Catalog Number	Memory		Nonvolatile Memory	Backplane Current		Power Dissipation	Thermal Dissipation	Weight
	Data and Logic[1]	I/O[2]		@ 5.1V dc	@ 24V dc			
1756-L1	64K bytes		No	0.65A	0.02A	3.3W	11.3 BTU/hr	0.28 kg (10.0 oz)
1756-L1M1	500K bytes	150K bytes	No	0.95A	0.02A	4.6W	15.6 BTU/hr	0.35 kg (12.5 oz)
1756-L1M2	1M bytes	150K bytes	No	1.05A	0.02A	4.8W	16.4 BTU/hr	0.35 kg (12.5 oz)
1756-L1M3	2M bytes	150K bytes	No	1.20A	0.02A	5.4W	18.4 BTU/hr	0.36 kg (12.7 oz)
1756-L55M12	750K bytes	208K bytes	No	1.23A	0.014A	5.6W	19.1 BTU/hr	0.35 kg (12.5 oz)
1756-L55M13	1.5M bytes	208K bytes	No	1.23A	0.014A	5.6W	19.1 BTU/hr	0.35 kg (12.5 oz)
1756-L55M14	3.5M bytes	208K bytes	No	1.25A	0.014A	5.7W	19.4 BTU/hr	0.36 kg (12.8 oz)
1756-L55M16	7.5M bytes (≤ 3.5M of data)	208K bytes	No	1.48A	0.014A	6.3W	21.5 BTU/hr	0.38 kg (13.4 oz)

(1) Data and logic memory stores: tags other than I/O, produced, or consumed tags; logic routines; and communication with OPC/DDE tags that use RSLinx software (also uses I/O memory)

(2) I/O memory stores: I/O tags, produced tags, consumed tags, communication via Message (MSG) instructions, communication with workstations, and communication with OPC/DDE tags that use RSLinx software (also uses data and logic memory).

Specifications: ControlLogix Controllers - Sheet 2 of 2

Catalog Number	Memory		Nonvolatile Memory	Backplane Current		Power Dissipation	Thermal Dissipation	Weight
	Data and Logic[1]	I/O[2]		@ 5.1V dc	@ 24V dc			
1756-L55M22	750K bytes	208K bytes	Yes	1.23A	0.014A	5.6W	19.1 BTU/hr	0.35 kg (12.5 oz)
1756-L55M23	1.5M bytes	208K bytes	Yes	1.23A	0.014A	5.6W	19.1 BTU/hr	0.35 kg (12.5 oz)
1756-L55M24	3.5M bytes	208K bytes	Yes	1.25A	0.014A	5.7W	19.4 BTU/hr	0.36 kg (12.8 oz)
1756-L61	2M bytes	478K bytes	Yes[3]	1.20A	14mA	3.5W	11.9 BTU/hr	0.32 kg (11.3 oz)
1756-L62	4M bytes	478K bytes						
1756-L63	8M bytes	478K bytes						

(1) Data and logic memory stores: tags other than I/O, produced, or consumed tags; logic routines; and communication with OPC/DDE tags that use RSLinx software (also uses I/O memory)

(2) I/O memory stores: I/O tags, produced tags, consumed tags, communication via Message (MSG) instructions, communication with workstations, and communication with OPC/DDE tags that use RSLinx software (also uses data and logic memory).

(3) Requires a 1784-CF64 Industrial CompactFlash card.

The following specifications apply to all ControlLogix controllers:

Description:	**Value:**
Operating Temperature	IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock): • 0° to 60° C (32 to 140° F)
Storage Temperature	IEC 60068-2-1 (Test Ab, Un-packaged Non-operating Cold), IEC 60068-2-2 (Test Bb, Un-packaged Non-operating Dry Heat), IEC 60068-2-14 (Test Na, Un-packaged Non-operating Thermal Shock): • -40° to 85° C (-40 to 185° F)
Relative Humidity	IEC 60068-2-30 (Test Db, Un-packaged Non-operating Damp Heat): • 5% to 95% noncondensing
Vibration	IEC60068-2-6 (Test Fc, Operating): • 2g @ 10-500Hz
Operating Shock	IEC60068-2-27 (Test Ea, Unpackaged Shock): • 30g
Non-Operating Shock	IEC60068-2-27 (Test Ea, Unpackaged Shock): • 50g
Emissions	CISPR 11: • Group 1, Class A
ESD Immunity	IEC 61000-4-2: • 6kV contact discharges • 8kV air discharges
Radiated RF Immunity	IEC 61000-4-3: • 10V/m with 1kHz sine-wave 80%AM from 30MHz to 2000MHz • 10V/m with 200Hz 50% Pulse 100%AM at 900Mhz
EFT/B immunity	IEC 61000-4-4: • ±4kV at 2.5kHz on power ports • ±4kV at 2.5kHz on communications ports
Surge Transient Immunity	IEC 61000-4-5: • ±2kV line-earth(CM) on shielded ports
Conducted RF Immunity	IEC 61000-4-6: • 10Vrms with 1kHz sine-wave 80%AM from 150kHz to 80MHz
Enclosure Type Rating	none (open-style)

Description:	Value:	
Isolation Voltage	30V Tested to withstand 500 Volts for 60 seconds	
Programming Cable	1756-CP3 or 1747-CP3 serial cable category 3(1)	
Replacement Battery	**For this component:**	**Use this battery:**
	1756-Lx controller	1756-BA1 (0.59g lithium)
	1756-BATM battery module	1756-BATA (10g lithium)

(1) See Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Certifications - Controllers and Memory Boards

When marked, the components have the following certifications. For CE, C-Tick, and EEX, see the Product Certification link at www.ab.com for Declarations of Conformity, Certificates, and other certification details.

1756-L1 and -L55 Controller

Certification:	Description
UL	UL Listed Industrial Control Equipment
CSA	CSA Certified Process Control Equipment
CSA	CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations
CE	European Union 89/336/EEC EMC Directive, compliant with: • EN 61000-6-4; Industrial Emissions • EN 50082-2; Industrial Immunity • EN 61326; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity
C-Tick	Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions
EEx	European Union 94/9/EEC ATEX Directive, compliant with: EN 50021; Potentially Explosive Atmospheres, Protection “n”

1756-L61, -L62, and -L63 Controller

Certification:	Description
UL	UL Listed Industrial Control Equipment
CSA	CSA Certified Process Control Equipment
CSA	CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations
FM	FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations
CE	European Union 89/336/EEC EMC Directive, compliant with: • EN 61000-6-4; Industrial Emissions • EN 50082-2; Industrial Immunity • EN 61326; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity
C-Tick	Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions
EEx	European Union 94/9/EEC ATEX Directive, compliant with: EN 50021; Potentially Explosive Atmospheres, Protection “n”

1756-Mx Memory Board

Certification:	Description
UR	UL Recognized Component Industrial Control Equipment
CSA	CSA Accepted Component for Process Control Equipment
CSA	CSA Accepted Component for Process Control Equipment in Class I, Division 2 Group A,B,C,D Hazardous Locations
CE	European Union 89/336/EEC EMC Directive, compliant with: • EN 61000-6-4; Industrial Emissions • EN 50082-2; Industrial Immunity • EN 61326; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity
C-Tick	Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions
EEx	European Union 94/9/EEC ATEX Directive, compliant with: EN 50021; Potentially Explosive Atmospheres, Protection “n”

Specifications and Certifications - 1784-CF64 Industrial CompactFlash Card

For CE and C-Tick, see the Product Certification link at www.ab.com for Declarations of Conformity, Certificates, and other certification details.

Description:	Value:
User Available Memory	64M bytes
Nonvolatile Memory	Yes
Weight	14.2 g (0.5 oz).
Operating Temperature	IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock): • 0 to 60°C (32 to 140°F)
Storage Temperature	IEC 60068-2-1 (Test Ab, Un-packaged Non-operating Cold), IEC 60068-2-2 (Test Bb, Un-packaged Non-operating Dry Heat), IEC 60068-2-14 (Test Na, Un-packaged Non-operating Thermal Shock): • -40 to 85°C (-40 to 185°F)
Relative Humidity	IEC 60068-2-30 (Test Db, Un-packaged Non-operating Damp Heat): • 5% to 95% noncondensing
Vibration	IEC60068-2-6 (Test Fc, Operating): • 2g @ 10-500Hz
Operating Shock	IEC60068-2-27 (Test Ea, Unpackaged Shock): • 30g
Non-Operating Shock	IEC60068-2-27 (Test Ea, Unpackaged Shock): • 50g
ESD Immunity	IEC 61000-4-2: • 4kV contact discharges • 8kV air discharges
Radiated RF Immunity	IEC 61000-4-3: • 10V/m with 1kHz sine-wave 80%AM from 80MHz to 1000MHz
EFT/B immunity	IEC 61000-4-4: • ±4kV at 2.5kHz on power ports

Description:	**Value:**	
Conducted RF Immunity	IEC 61000-4-6: • 10Vrms with 1kHz sine-wave 80%AM from 150kHz to 80MHz	
Enclosure Type Rating	none (open-style)	
Emissions	CISPR 11: • Group 1, Class A	
Certifications: (when product is marked)	CE	European Union 89/336/EEC EMC Directive, compliant with: • EN61000-6-4; Industrial Emissions • EN 50082-2; Industrial Immunity • EN 61326; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity
	C-Tick	Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions

Environment and Enclosure Information

ATTENTION

Environment and Enclosure

This equipment is intended for use in a Pollution Degree 2 industrial environment, in overvoltage Category II applications (as defined in IEC publication 60664-1), at altitudes up to 2000 meters without derating.

This equipment is considered Group 1, Class A industrial equipment according to IEC/CISPR Publication 11. Without appropriate precautions, there may be potential difficulties ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbance.

This equipment is supplied as "open type" equipment. It must be mounted within an enclosure that is suitably designed for those specific environmental conditions that will be present and appropriately designed to prevent personal injury resulting from accessibility to live parts. The interior of the enclosure must be accessible only by the use of a tool. Subsequent sections of this publication may contain additional information regarding specific enclosure type ratings that are required to comply with certain product safety certifications.

See NEMA Standards publication 250 and IEC publication 60529, as applicable, for explanations of the degrees of protection provided by different types of enclosure. Also, see the appropriate sections in this publication, as well as the Allen-Bradley publication 1770-4.1 ("Industrial Automation Wiring and Grounding Guidelines"), for additional installation requirements pertaining to this equipment.

European Hazardous Location Approval

European Zone 2 Certification - 1756-L1, -L1M1, -L1M2, -L1M3, -L55M13, -L55M14, -L55M16, -L61, -L62, and -L63 Controllers

This equipment is intended for use in potentially explosive atmospheres as defined by European Union Directive 94/9/CE.

The LCIE (Laboratoire Central des Industries Electriques) certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of Category 3 equipment intended for use in potentially explosive atmospheres, given in Annex II to this Directive. The examination and test results are recorded in confidential report No. 28 682 010.

Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN 50021.

IMPORTANT

- This equipment is not resistant to sunlight or other sources of UV radiation.
- The secondary of a current transformer shall not be open-circuited when applied in Class I, Zone 2 environments.
- Equipment of lesser Enclosure Type Rating must be installed in an enclosure providing at least IP54 protection when applied in Class I, Zone 2 environments.
- This equipment shall be used within its specified ratings defined by Allen-Bradley.
- Provision shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 40% when applied in Class I, Zone 2 environments.

North American Hazardous Location Approval

The following information applies when operating this equipment in hazardous locations:	Informations sur l'utilisation de cet équipement en environnements dangereux :
Products marked "CL I, DIV 2, GP A, B, C, D" are suitable for use in Class I Division 2 Groups A, B, C, D, Hazardous Locations and nonhazardous locations only. Each product is supplied with markings on the rating nameplate indicating the hazardous location temperature code. When combining products within a system, the most adverse temperature code (lowest "T" number) may be used to help determine the overall temperature code of the system. Combinations of equipment in your system are subject to investigation by the local Authority Having Jurisdiction at the time of installation.	Les produits marqués "CL I, DIV 2, GP A, B, C, D" ne conviennent qu'à une utilisation en environnements de Classe I Division 2 Groupes A, B, C, D dangereux et non dangereux. Chaque produit est livré avec des marquages sur sa plaque d'identification qui indiquent le code de température pour les environnements dangereux. Lorsque plusieurs produits sont combinés dans un système, le code de température le plus défavorable (code de température le plus faible) peut être utilisé pour déterminer le code de température global du système. Les combinaisons d'équipements dans le système sont sujettes à inspection par les autorités locales qualifiées au moment de l'installation.

WARNING

EXPLOSION HAZARD

- Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous.
- Do not disconnect connections to this equipment unless power has been removed or the area is known to be nonhazardous. Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product.
- Substitution of components may impair suitability for Class I, Division 2.
- If this product contains batteries, they must only be changed in an area known to be nonhazardous.

AVERTISSEMENT

RISQUE D'EXPLOSION

- Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher l'équipement.
- Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher les connecteurs. Fixer tous les connecteurs externes reliés à cet équipement à l'aide de vis, loquets coulissants, connecteurs filetés ou autres moyens fournis avec ce produit.
- La substitution de composants peut rendre cet équipement inadapté à une utilisation en environnement de Classe I, Division 2.
- S'assurer que l'environnement est classé non dangereux avant de changer les piles.

Additional Manuals

Installation instructions ship with each component. If you want other documentation, you must order it separately. This product has the following manuals:

- *ControlLogix Battery Module Installation Instructions,* publication 1756-IN576
- *Logix5000 Controllers Common Procedures*, publication 1756-PM001
- *Logix5000 Controllers General Instructions Reference Manual*, publication 1756-RM003
- *ControlLogix System User Manual*, publication 1756-UM001

If you want to:	Then:
view a manual	Visit either of these locations: • www.ab.com/manuals • www.theautomationbookstore.com
download a manual	
purchase a printed manual	Use one of these options: • contact your local distributor or Rockwell Automation representative • visit www.theautomationbookstore.com and place an order • call 800.963.9548 (USA/Canada) or 001.320.725.1574 (outside USA/Canada)

Rockwell Automation Support

Rockwell Automation provides technical information on the web to assist you in using our products. At http://support.rockwellautomation.com, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration and troubleshooting, we offer TechConnect Support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit http://support.rockwellautomation.com.

Installation Assistance

If you experience a problem with a hardware module within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your module up and running:

United States	1.440.646.3223 Monday – Friday, 8am – 5pm EST
Outside United States	Please contact your local Rockwell Automation representative for any technical support issues.

New Product Satisfaction Return

Rockwell tests all of our products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned:

United States	Contact your distributor. You must provide a Customer Support case number (see phone number above to obtain one) to your distributor in order to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for return procedure.

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